

AMSAT News Service Weekly Bulletins

Issue: ANS-028

Date: 1994-01-29

Sources: amsat-ans-1994-ans-028.01.txt, amsat-ans-1994-ans-029-weekly.txt

#: 237170 S5/Amateur Satellites [HAMNET]

30-Jan-94 19:00:31

Sb: AMSAT: DOVE Telemetry

Fm: HamNet SysOp Scott W3VS 76703,407

To: All

HR AMSAT NEWS SERVICE BULLETIN 028.01 FROM AMSAT HQ

SILVER SPRING, MD JANUARY 29, 1994

TO ALL RADIO AMATEURS BT

BID: \$ANS-028.01

DOVE (D0-17) Telemetry Watchers Will Be Recognized

This weekend the DOVE (D0-17) Command Team will begin using the DOVE text message frame to transmit the callsigns of everyone who has sent a DOVE reception report to Dr. Junior Torres De Castro (PY2BJ0) of the Brazilian AMSAT Group, BRAMSAT, the owner of DOVE. Because of the limited length of that frame, about 15 calls will be sent at a time and the message will be changed about every 3 or 4 days. This is the DOVE Ground Command Team's way of thanking everyone who has sent in reports (several hundred at present). Special DOVE QSL cards will also be mailed to those who have reported DOVE reception to PY2BJ0. We are particularly interested in hearing about the equipment used and the quality of the signals. We would also like to hear about the use of DOVE signals or data in education. Actual telemetry is not needed at this time.

Please send reports to:

Dr. Junior Torres De Castro (PY2BJ0)

119 Macaubal

Sao Palo

Brazil 01254

[The AMSAT News Service would like to thank Jim White (WD0E) and the DOVE Command Team for this bulletin item.]

#: 237171 S5/Amateur Satellites [HAMNET]

30-Jan-94 19:00:41

Sb: AMSAT: Antenna Polar...

Fm: HamNet SysOp Scott W3VS 76703,407

To: All

HR AMSAT NEWS SERVICE BULLETIN 028.02 FROM AMSAT HQ

SILVER SPRING, MD JANUARY 29, 1994

TO ALL RADIO AMATEURS BT

BID: \$ANS-028.02

Antenna Polarization Sense Revisited By WD0E

There have been many discussions occurring on Compuserve's HAMNET forum and in various corners of the amateur radio community about the need for antenna polarity switching while using the OSCAR satellites. DOVE Command Team member Jim White (WD0E) wants to add some further comments about this important issue based on his years of experience working with the MICROSATs.

Case For Polarization Switching

"The following is based on design data, direct measurements and

experimentation, surveys, and anecdotal evidence from discussion threads on the digital birds and Compuserve. I believe the empirical data is correct, but an error or two could certainly have crept in. I submit it for discussion and comment. The sense (right or left) of the circular polarization of the four original MICROSATs changes depending on the transmitter in use. There was no attempt to make a particular transmitter any sense. The way they came out was based on how the semi-rigid cable and components could be designed into the transmitter module. Here is a list of the sense of each one:

A0-16 RC 437.050 RHCP
A0-16 PSK 437.025 LHCP
D0-17 XMTR A 145.825 LHCP
D0-17 XMTR B 145.825 RHCP
W0-18 RC 437.100 RHCP
W0-18 PSK 437.075
L0-19 RC (&CW) 437.125 RHCP
L0-19 PSK 437.050 LHCP

The A0-16 PSK XMTR and the W0-18 PSK XMTR have problems and are not presently in use (although the A0-16 PSK transmitter - with LHCP - was used for about three years). We normally run XMTR B on DOVE because it is slightly more efficient. Last time I checked L0-19 was being switched occasionally between it's two. So it is strictly coincidence that three of these are RHCP virtually all the time. L0-19 changes. Problems with any of the xmtrs presently in use could result in a switch, which would change their downlinks to LHCP.

As long as you are receiving strong signals from these satellites, a miss-matched sense will not reduce the margin enough to cause missed data. However, if the signal is weak, because of a marginal receive arrangement or low power from the satellite, a miss-matched sense will cause significant loss of data. Uplinks are not a problem because they use monopoles and the receivers are very sensitive.

F0-20 is circular and has a fixed sense both up and down, but because of it's orbit geometry and motion, continuously good signals through it for an entire pass can only maintained if sense is switched, usually several times and on both uplink and downlink. This is particularly noticeable in the analog mode.

On A0-21, the 435 MHz receiving antenna, which is shared by the analog and

digital modes, is a Helix with up to +3 db gain using Right Hand Circular Polarization. The 145 MHz transmitting antenna is a half-wave dipole. These antennas are always earth-pointing due to the satellite's gravity gradient attitude stabilization system. It is clear from a little experimentation and from listening to the DSP FM repeat mode, that changing

sense

makes a significant difference in the overall link. At times, it is the difference between being heard and not. It changes during a pass. The UOSAT series use monopole antennas. I have never noticed a difference in link efficiency when sense is switched.

I have no data on which A0-26 transmitter has which sense. But this is a MICROSAT design, so changing transmitters will change sense. In it's first weeks of store and forward operation it was running very low power and incorrect sense made a large difference in received strength during most parts of most passes. If it continues to be necessary to run low power from this satellite, or if the LHCP transmitter is used, left hand sense will be necessary, and switching during a pass may be essential for efficient operation.

A0-27 (EYESAT) uses a monopole for the downlink so sense makes little

difference when the amateur transmitter is on high power. However, when receiving very weak signals from it (exciter only), switching sense is necessary to be able to even detect the signal at times. It remains to be seen how much power this bird will be able to sustain on it's amateur (secondary) transmitter, so downlink sense could be an issue. Uplink is not an issue, as a monopole is used with very sensitive receivers.

UNAMSAT is built on a MICROSAT design. It's downlink sense may be left or right depending on which transmitter is used. Downlink power and sense will not be known until this bird is in orbit and becomes operational. During checkout it is likely both transmitters will be used at times, requiring sense switching. Tumbling during the first few days in orbit will almost certainly require switching. Downlink power *could* be somewhat lower than A0-16 and L0-19 because of the power necessary to run the meteor experiment transmitter. This situation would be similar to W0-18, which routinely runs at about half of the power of A0-16 and L0-19 because of the need to support the experiments.

VOXSAT will use monopole antennas, so the link polarization and sense needs may be similar to A0-21.

A0-13: Gain antennas are RHCP. When the satellite is at or near apogee and/or pointing angles are good, RHCP is always best. However, when there is significant off pointing or the omni's are in use, LHCP can often result in better uplink and downlink signals. LHCP can be better both in terms of more strength and reduced depth of spin modulation fade.

Stan Wood (WA4NFY) informs me that Phase-3D will use all RHCP for its circular antennas. Since it will be nadir pointing at all times, sense switching should not be necessary. This assumes all goes as planned, and we certainly hope it does!

I may have left out a bird or two, and have not hit all those being planned. Nor have I attempted to exhaustively document all situations or those of interest only to command stations. However, there are numerous situations in the foregoing where LHCP is necessary or favored. Using the wrong sense will reduce efficiency and/or enjoyment. In a few cases it may make operation impossible. There is certainly much enjoyment available to a satellite enthusiast with fixed RHCP antennas (or even linear). But I hope I have shown that full utilization of our satellite resources requires switchable antenna circularity."

[The AMSAT News Service (ANS) would like to thank Jim White (WD0E) for this bulletin. If you would like to respond to Jim's thoughts on antenna polarization, he can be reached at his INTERNET address of: wd0e@amsat.org.

Also, the ANS would like to thank DB20S for the information about the A0-21 antennas.]

#: 237172 S5/Amateur Satellites [HAMNET]

30-Jan-94 19:00:47

Sb: AMSAT: Phase 3-D Team

Fm: HamNet SysOp Scott W3VS 76703,407

To: All

HR AMSAT NEWS SERVICE BULLETIN 028.03 FROM AMSAT HQ

SILVER SPRING, MD JANUARY 29, 1994

TO ALL RADIO AMATEURS BT

BID: \$ANS-028.03

AMSAT-NA PHASE 3-D TEAM JOINS WITH FLORIDA-BASED ENGINEERING
GROUP FOR SPACECRAFT INTEGRATION

About a half dozen members of the North American Phase 3-D Development team met recently to assess overall progress on the program and to begin planning for the spacecraft's final assembly in preparation for its April, 1996 launch from Korou, French Guyana.

Dick Jansson (WD4FAB), AMSAT VP for Engineering, hosted the North American Phase 3-D progress meeting near Orlando, Florida on 7-9 January, 1994, where a number of critical Phase 3-D issues were discussed. While several open items still must be resolved, AMSAT-NA's overall technical contributions to the Phase 3-D project remain on track.

"We're still on schedule for the 1996 launch," said Bill Tynan (W3X0), AMSAT-NA President. "I am really proud of the way everyone on the North American team is pulling together to insure our responsibilities to the international project are met", he said.

The high point of the meeting came when several officers of a Florida-based volunteer group, called Space Frontier Operations (SFO), presented their proposal to manage the overall integration effort for the Phase 3-D spacecraft. After extensive discussions concerning their capabilities and proposed integration approach, SFO's offer was gratefully accepted by Bill Tynan, Dick Jansson, and the rest of AMSAT-NA Phase 3-D team members present.

Space Frontier Operations is a relatively new group based in the Orlando/Cape Canaveral, Florida area. Presently, their membership stands at about one hundred. They are, however, a rapidly growing, not-for-profit, Florida corporation dedicated to the private, non-commercial, use of space. Their first project was a "Get-Away Special" (GAS Can) experiment which will fly on an upcoming NASA Space Shuttle mission. Most SFO members are also connected professionally to NASA or other space agencies at the Cape. Together, they bring several decades of "hands on" experience designing and building a wide variety of government and commercial space hardware to the Phase 3-D integration effort.

"We are very honored to be associated with such a prestigious group as AMSAT", said Andy Clark, SFO's Chief Executive Officer at the recent Orlando meeting. He went on to note, "We believe our professional aerospace experience will bring another, very positive dimension to an already outstanding international Phase 3-D team." These same feelings were echoed by Mike Peacock (KR4GA), SFO's Director of Engineering, who stated that because SFO and AMSAT share many of the same goals, the partnership should prove mutually beneficial.

Also on hand for the meeting were Keith Baker (KB1SF), AMSAT VP, Strategic Planning, who discussed the overall Phase 3-D Master Schedule. In addition, Stan Wood (WA4NFY), updated the team on Phase 3-D's various antenna designs. Dick Daniels (W4PUJ), AMSAT's North American P3-D Team Director along with Dr. Tom Clark (W3IWI), P-3D GPS experiment Team Leader, joined the group by telephone. Longtime AMSAT satellite builder Jan King, W3GEY, and Lyle Johnson (WA7GXD), from TAPR, were also present and served as technical advisors to both teams during the discussions.

Final designs for solar cells, solar panels, batteries, as well as the progress now being made on the spacecraft's overall structure were also discussed. In addition, possible integration sites in the Orlando/Cape Canaveral area were evaluated and several team members toured a candidate facility at the Orlando International Airport. A final selection regarding the most cost-effective location for Phase 3-D integration will be made once firm rental price proposals are received and evaluated by the now AMSAT-NA/SFO combined Phase 3-D integration team.

[The AMSAT News Service would like to thank Keith Baker (KB1SF) for this bulletin item. Keith can be reached at his Compuserve address of

75070,331.]

#: 237173 S5/Amateur Satellites [HAMNET]
30-Jan-94 19:00:58
Sb: AMSAT: Ops Net Schedule
Fm: HamNet SysOp Scott W3VS 76703,407
To: All

HR AMSAT NEWS SERVICE BULLETIN 028.05 FROM AMSAT HQ
SILVER SPRING, MD JANUARY 29, 1994
TO ALL RADIO AMATEURS BT
BID: \$ANS-028.05

Current AMSAT Operations Net Schedule For A0-13

AMSAT Operations Nets are planned for the following times. Mode-B Nets are conducted on A0-13 on a downlink frequency of 145.950 MHz. If, at the start of the OPS Net, the frequency of 145.950 MHz is being used for a QSO, OPS Net enthusiasts are asked to move to the alternate frequency of 145.955 MHz.

Date	UTC	Mode	Phs	NCS	Alt NCS
06-Feb-94	0530	B	057	W5IU	WA5ZIB
12-Feb-94	2200	B	063	W9ODI	VE2LVC
20-Feb-94	0200	B	070	WA5ZIB	W5IU
28-Feb-94	0430	B	068	WB6LLO	W9ODI

Any stations with information on current events would be most welcomed. Also, those interested in discussing technical issues or who have questions about any particular aspect of OSCAR satellite operations, are encouraged to join the OPS Nets. If neither of the Net Control Stations show up, any participant is invited to act as the NCS.

#: 237174 S5/Amateur Satellites [HAMNET]
30-Jan-94 19:01:10
Sb: AMSAT: K0-25 BBS Service
Fm: HamNet SysOp Scott W3VS 76703,407
To: All

HR AMSAT NEWS SERVICE BULLETIN 028.06 FROM AMSAT HQ
SILVER SPRING, MD JANUARY 29, 1994
TO ALL RADIO AMATEURS BT
BID: \$ANS-028.06

KITSAT-OSCAR-25 Begins Bulletin Board Operations (BBS) 01-FEB-94

K0-25 will open its BBS service beginning on 01-FEB-94. Many discussions are going on about K0-25 services. Thank you for your cooperation so far by keeping your transmitters silent on the K0-25 uplink frequencies so that we could complete our experiments with K0-25. K0-25 will operate in normal mode, 9600 baud FSK using the usual set-up for any of the 9600 baud OSCARS, e.g., K0-23, U0-22, or PoSAT. You will, therefore, not have to make any changes to your station to use K0-25.

Since not all the on board experiments are not finished yet on K0-25, there will be, at times some interruptions of service. But, SaTReC has decided to open the service because the remaining experiments will not cause any serious problems with the K0-25 BBS service.

"We hope you enjoy our new star in space," says Hyungshin Kim of the Korean Institute of Advanced Space Technology.

#: 237175 S5/Amateur Satellites [HAMNET]
30-Jan-94 19:01:15
Sb: AMSAT: A0-13 ZR0 Test
Fm: HamNet SysOp Scott W3VS 76703,407
To: All

HR AMSAT NEWS SERVICE BULLETIN 028.07 FROM AMSAT HQ
SILVER SPRING, MD JANUARY 29, 1994
TO ALL RADIO AMATEURS BT
BID: \$ANS-028.07

A0-13 ZR0 Tests Begin For '94

AMSAT-OSCAR-13

ZR0 TEST SCHEDULE

FEBRUARY-MARCH 1994

The ZR0 Memorial Technical Achievement Award Program, or just "ZR0 Test" has a

new schedule for February and March, 1994, via AMSAT-OSCAR-13. This activity is a test of operating skill and equipment performance.

During a typical ZR0 run, a control station will send numeric code groups using CW at 10 words-per-minute. At the beginning of the run, uplink power from the

control station is set to match the general beacon downlink strength. This is

level "zero". The control operator will send and repeat a random five-digit number, then lower his uplink power by 3 dB (half power) and repeat the procedure with a new random number (level "1"). This will continue to a level

30 dB below the beacon (level "A").

A participating listener monitors the downlink signals until he or she can no

longer copy the numbers. Those who can hear the beacon will qualify for the basic award by copying the code group heard at level "zero". The challenge is

to improve home-station performance to a point where the lower-level downlink signals can be copied (levels 6 through A). To date, only one station, Darrel

Emerson (AA7FV), has successfully copied level "A".

The following schedule of Mode "B" tests were chosen for convenient operating times and favorable squint angles. The tests can be heard on 145.840 MHz. Andy WA5ZIB will conduct all the tests. Mode "JL" tests will no longer occur due to the failure of A0-13's 70-cm transmitter.

Day	Date (UTC)	Time	Areas covered
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Saturday Feb. 12, 1994 2345 UTC NA, SA, Europe, W. Africa
Sunday Feb. 20, 1994 0330 UTC NA, NW SA, Japan, Pacific
Saturday Feb. 26, 1994 1930 UTC NA, SA, Europe, Africa, ME
Saturday Mar. 19, 1994 1930 UTC NA, SA, Europe, Africa
Saturday Mar. 26, 1994 2315 UTC NA, SA

Note that the dates and days are shown in "UTC", thus the second test occurs at 9:30 PM CST Saturday night (the 19th). Any changes will be announced as soon as possible via the AMSAT HF and A0-13 Operations Nets.

All listener reports with date of test and numbers copied should be sent to Andy MacAllister WA5ZIB, AMSAT V.P. User Operations, 14714 Knights Way Drive,

Houston, TX 77083-5640. A report will be returned verifying the level of accurate reception. An S.A.S.E. is appreciated but not required.

Information about the AMSAT Awards Program can be found on page 197 of the "Proceedings of the AMSAT-NA Tenth Space Symposium" (1992). This paper, covering all the AMSAT-NA awards including specifics on the ZRO Test, was reprinted on page 10 in the March/April 1993 issue of "The AMSAT Journal". The ZRO Test information provided in the article covers test procedures, means for obtaining certificates and gives some historical background about the program. Reprints of the article can be obtained for an S.A.S.E. to WA5ZIB at the address above.

#: 237176 S5/Amateur Satellites [HAMNET]
30-Jan-94 19:01:18
Sb: AMSAT: A0-21 Birthday
Fm: HamNet SysOp Scott W3VS 76703,407
To: All

HR AMSAT NEWS SERVICE BULLETIN 028.08 FROM AMSAT HQ
SILVER SPRING, MD JANUARY 29, 1994
TO ALL RADIO AMATEURS BT
BID: \$ANS-028.08

Happy Birthday AMSAT-OSCAR-21!

On 29-JAN-91 the first international Orbiting Satellite Carrying Amateur Radio

(OSCAR) in which radio amateurs from the former Soviet Union (CIS) worked together with radio amateurs from Germany was successfully launched.

The official name of the project was RM1, which stands for "RADIO M-1". The digital transponder RUDAK-2 is part of RM1.

After the launch from the Northern Cosmodrome in Plesetsk, Russia, the satellite was named as AMSAT-OSCAR-21, to emphasize that the spacecraft was built by, and for, Radio Amateurs around the world.

AMSAT OSCAR-21 was attached as a secondary payload (Piggy-back) aboard the CIS

geological research satellite "INFORMATOR-1".

AMSAT-OSCAR-21 (also known as RS-14) is a joint project between AMSAT-U in Russia and AMSAT-DL in Germany.

[The AMSAT News Service (ANS) would like to thank DB20S for this bulletin item.]

#: 237177 S5/Amateur Satellites [HAMNET]
30-Jan-94 19:01:22
Sb: AMSAT:Weekly Status Rpts
Fm: HamNet SysOp Scott W3VS 76703,407
To: All

HR AMSAT NEWS SERVICE BULLETIN 028.09 FROM AMSAT HQ
SILVER SPRING, MD JANUARY 29, 1994
TO ALL RADIO AMATEURS BT
BID: \$ANS-028.09

Weekly OSCAR Status Reports: 29-JAN-94

A0-13: Current Transponder Operating Schedule:
L QST *** A0-13 TRANSPONDER SCHEDULE *** 1994 Jan 31-Apr 04
Mode-B : MA 0 to MA 90 |
Mode-BS : MA 90 to MA 120 |
Mode-S : MA 120 to MA 145 |<- S transponder; B trsp. is OFF
Mode-S : MA 145 to MA 150 |<- S beacon only
Mode-BS : MA 150 to MA 180 | Blon/Blat 180/0
Mode-B : MA 180 to MA 256 |
Omnis : MA 230 to MA 30 | Move to attitude 240/0, Apr 04
Poor Sun angle and battery testing need maximum OFF time.
[G3RUH/DB20S/VK5AGR]

F0-20: The following is the current F0-20 operating schedule:
From January '94 thru March '94, the analog mode and the
digital mode will be on alternately for a week at a time.
23-MAR-94 7:52 -TO- 30-MAR-94 8:15 UTC
DIGITAL MODE: Unless otherwise noted above.
[Kazu Sakamoto (JJ1WTK) qga02014@niftyserve.or.jp]

A0-21: ZL3VTV works A0-21 with great success from his QTH in
Christchurch, New
Zealand. He regularly works stations in Australia with ease using a
a fixed 10 element beam pointed 30 deg above the horizon on the uplink

and using a collinear antenna for the downlink. ZL3VTV is looking for
to work more ZL's and would entertain schedules. [ZL3VTV @ZL3AC]

The AMSAT NEWS Service (ANS) is looking for volunteers to contribute weekly
OSCAR status reports. If you have a favorite OSCAR which you work on a
regular basis and would like to contribute to this bulletin, please send
your observations to WD0HHU at his CompuServe address of 70524,2272, on
INTERNET at wd0hhu@amsat.org, or to his local packet BBS in the Denver, CO
area, WD0HHU @ W0LJF.#NECO.CO.USA.NOAM. Also, if you find that the current
set of orbital elements are not generating the correct AOS/LOS times at
your QTH, PLEASE INCLUDE THAT INFORMATION AS WELL. The information you
provide will be of value to all OSCAR enthusiasts.

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